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FOREIGN AGRICULTURE

November 1961



Market Day, Eastern Nigeria

The Last Great Frontier

German Agriculture—East and West

Peru: Prosperity and Problems

To report and interpret world agricultural developments

FOREIGN AGRICULTURE

Vol. XXV • No. 11

November 1961

The World Food Budget

This past month the Department of Agriculture published an important and most revealing study entitled *The World Food Budget, 1962 and 1966*. It attempts to measure the foods produced and consumed by the people of the world in 1958, and as projected for 1962 and 1966.

The findings present sharp contrasts. Diets are nutritionally adequate in the 30 industrialized nations in the temperate Northern Area which accounts for a third of mankind. But for the 1.9 billion people who live in the less developed countries of the semitropical and tropical Southern Area, malnutrition is widespread and persistent and there is little likelihood that the food problem soon will be solved.

Foreign Agriculture, recognizing the importance of this publication, asked Dr. Wilhelm Anderson of the Department's Economic Research Service to write an article based upon it. This appears on the opposite page under the title *The Last Great Frontier—Man's Struggle Against Chronic Malnutrition*.

Two other articles in this issue touch upon the same subject. Mr. Lester Brown has chosen three countries—India, Japan, and the United States—and compared their diets. To correct India's nutritional deficiencies, he finds, would cost just \$2.30 per person a year, and Japan's only \$1.08.

Dr. Sherman Johnson's thesis is that for the first time in the history of the world it is physically possible to provide adequate food supplies for all its inhabitants. In his article, *The Agricultural Paradox*, he points to ways in which the gap can be closed between present and potential output in the underdeveloped countries.

Cover Photograph

Inadequate transportation in many of the world's food-deficit areas forces the people to depend on local markets for their food. Typical is this market in Onitsha, Eastern Nigeria, where the produce is brought in on the heads of the women and children.

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Growth Through Agricultural Progress

Foreign Agriculture is published monthly by the Foreign Agricultural Service U. S. Dept. of Agriculture, Washington 25, D. C. Use of funds for this publication has been approved by the Director of the Bureau of the Budget (Sept. 4, 1959). Yearly subscription rate is \$1.75, domestic, \$2.50, foreign; single copies are 15 cents. Orders should be sent to Superintendent of Documents, Government Printing Office, Washington 25, D. C.



■ Diet-Deficit Countries

The Last Great Frontier —man's struggle against chronic malnutrition

By WILHELM ANDERSON

**Director, Regional Analysis Division
Economic Research Service**

While other events have claimed major world attention in the last two momentous decades, much of mankind has quietly realized a dream so old it predates history, so significant it tends to overshadow even the achievements of the space age.

For the first time in human experience, one-third of the world's total population is free from fear of hunger.

The 30 industrialized nations that circle the earth's northern tier, but including Australia and New Zealand in the Southern Hemisphere, now have the science, technology, financial resources, management ability, and national vigor to permanently assure their food supply on existing resources.

This article is based on *The World Food Budget, 1962 and 1966*, published by the Economic Research Service in cooperation with the Foreign Agricultural Service, U.S. Department of Agriculture, October 1961.

Had this taken a century or more to achieve, it would have been remarkable. That it has been accomplished in just 20 years, and most fully in the last 10 years, is surely without precedent in almost any field of human endeavor.

Man has struggled against the ravages of hunger since time began. Famine was one of the Four Horsemen of the Apocalypse, and for centuries populations rose or fell according to the available food supply. Even as late as the 17th century great famines still swept across Europe as elsewhere, moving one British observer of the period to sum up the attendant human misery and despair in one memorable line: "They that die by famine die by inches."

Population pressures on the land, a primary cause of persistent food shortages, were finally relieved in Europe by vast westward migrations. Some 35 million people came to the New World during the 19th and early

20th centuries alone. With much arable land still unused, the Western Hemisphere has never had the problem of excessive population density that formerly plagued Europe and continues to retard progress in many older civilizations.

The food supply of Canada and the United States, as well as Australia and New Zealand, has been reasonably adequate for a long period, that of northwestern Europe for a somewhat shorter period. But only since World War II has greatly increased production of food, or goods that can be traded for food, assured a permanently adequate diet in Mediterranean Europe, Eastern Europe, including the Soviet Union, and Japan.

Due in large measure to the North's achievement, major famines are a thing of the past worldwide, Communist China possibly excepted. Significantly, the Bengal famine of 1942-43 in which over a million people died of hunger was the last great famine

in the Free World. Canada and the United States now have sufficient excess food production over domestic needs and the financial resources to maintain reserve food stocks. From these stocks they are able to provide emergency food aid to other countries whenever drought, flood, or other natural forces create conditions that threaten mass starvation.

Problem Areas Today

For the 1.9 billion people living in the world's underdeveloped Southern Area,¹ the problem is chronic malnutrition. This is an insidious affliction. It is manifested in potbellied preschool children, underweight adolescents, and undersized adults. The short life span is marked by endemic and other contagious diseases. Individual vitality and national vigor, factors which contributed so much to the North's rapid advance, are unobtainable from substandard diets. Indeed, in itself malnutrition is so pervasive, so acute throughout much of the Southern Area, it literally prescribes the pattern of life, limiting not only the people's present living standard but their hope for a better future life.

The Southern Area includes some 70 less developed countries in Latin America, Africa and West Asia, Communist Asia, and the non-Communist Far East, excluding Japan. Unlike the temperate Northern Area which has most of the best agricultural land, it is largely tropical or semitropical with 761 million hectares of arable land—54 percent of the world total—for the support of two-thirds of the world population. This is only 0.4 hectare per capita as against 0.7 hectare for the Northern Area. Subsistence and one-crop farming is prevalent in many regions, and population density particularly in the Far East exerts severe pressures on the available food supply.

In the 23-year period ending in 1960-61, food production in Latin America just about kept pace with population growth; Africa and West

Asia gained slightly; but both Communist Asia and the Far East lost ground with declines of 0.3 and 0.4 percent, respectively.

Low farm output and resulting malnutrition are closely related, both as cause and effect, to many other problem areas. Much of the Southern Area has depleted soils, low per capita purchasing power and foreign exchange earnings, poor communications, inadequate health facilities, and a high degree of illiteracy.

Nevertheless, considerable progress has been made in recent years. World vital statistics clearly substantiate this. The death rate has dropped sharply throughout the Southern Area in the last 15 years. Illiteracy, though still high, is diminishing. Soils are being made more productive, if very slowly. But the very enormity of the task precludes any short-term solution.

The World Food Budget

To determine what and where the world's major food shortages are, the Department of Agriculture recently made a detailed study of world food production, trade, expected consumption, and the minimum level above expected consumption required to give people an adequate diet for normal activity and health. Projections were made for the years 1962 and 1966, using 1958 as the base year. Although the published report shows projections by regions and for the world, the study was based on information compiled for some 90 individual countries.

The study shows that, when measured against nutritional reference standards expressed in terms of various proteins, fat, and total calories needed, all Southern regions will be deficit in one or more categories. For 1962, total consumption from domestic production and imports for the Southern Area as a whole will fall short of the nutritional reference standard by the following: animal protein equal to 1.5 million metric tons of nonfat dry milk; pulse protein equal to 150,000 tons of dry beans and peas; fat equivalent to 3 million tons of vegetable oil; and "other" protein and calories equivalent to 29 million tons of wheat. About the same shortages are projected for 1966.

The greatest shortages occur in

Asia south of the Soviet border where no major industrial development or emigration has ever relieved the population pressures on the food supply. The Far East, excluding Communist China, has two-thirds of the wheat shortage projected for 1962 and nearly one-half of the animal and pulse protein shortage. Communist China alone has about one-half of the animal protein and fat shortages and about 3 million tons of the wheat shortages; it is apparently subject to periodic famine in some regions.

Consumption levels projected for Latin America, Africa, and West Asia for both 1962 and 1966 show a substantial shortage of wheat. The animal and pulse protein intake projected for Latin America and West Asia is nutritionally adequate, and the fat shortage is small. Only minor shortages of the three nutrients appear in Africa.

These projections assume further increases in food production in the deficit areas and increased imports, including accelerated concessional purchases and grants.

Exceptions to the general situation in the Southern Area are: Taiwan in the Far East; Turkey, Lebanon, and Israel in West Asia; Republic of South Africa and Federation of Rhodesia and Nyasaland in Africa; and Argentina, Uruguay, Chile, Brazil, Costa Rica, Cuba, and Mexico in Latin America. Diets are nutritionally adequate on a national basis in these countries. While Japan is part of the industrialized North, it is shown as diet deficit in the world map because of some shortage in fat.

Major Barriers to Progress

Despite increased commercial and other imports from the United States and elsewhere, it is apparent that food shortages in the Southern Area can be overcome only by higher farm output in the deficit countries themselves.

This will require vast new capital investment in many problem areas. Countrywide education programs are needed to combat illiteracy and hasten acceptance among farmers of more scientific farming methods. Better and more extensive marketing and transportation systems will be required both to speed the flow of food from farm to consumer and to encour-

¹ For the purposes of the study reported here, the world has been divided into two parts: The Southern Area—the lands south of the 30th parallel, N., excluding Australia and New Zealand; the Northern Area—the lands north of the parallel, excluding Communist Asia and Korea.

age development of commercial agriculture in areas where subsistence farming has been the traditional pattern for centuries. Some countries also need extensive hydroelectric development to bring new land under irrigated cultivation.

While these are all immense problems, three others are particularly outstanding—low income per person, high ratio of population to land, and lack of chemical fertilizer.

Low income per person.—The resident of the industrialized North had an average annual income of \$843 in 1955-57. In contrast, his counterpart in the Southern Area averaged only \$95. Averages by region were: Latin America, \$235; Africa and West Asia, \$137; Far East, less Japan, \$73; and Communist Asia, \$62.

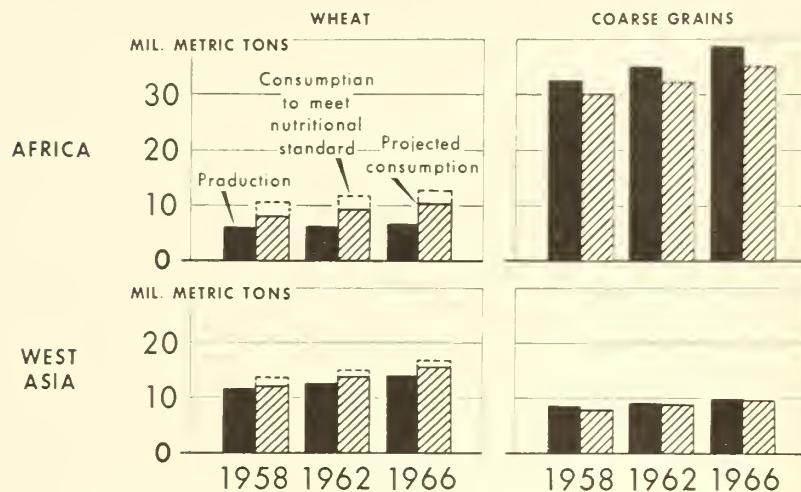
Such low per capita incomes prevent individuals from purchasing the additional domestic or imported food-stuffs needed to raise their dietary level. However, most countries are reluctant to initiate free food distribution programs, and the only long-term solution is to increase personal income. Further economic development, with greater urbanization and industrialization, is needed to give farmers the incentive and the materials with which to increase production for commercial markets.

High ratio of population to land.—With population growing rapidly in most Southern regions, arable land per capita is shrinking. Already closely settled on 0.4 acre of arable land per person in Communist Asia and 0.8 acre in the Far East, these regions have little unused arable land on which to expand. Acreages now under cultivation will have to be made more productive by the addition of plant nutrients.

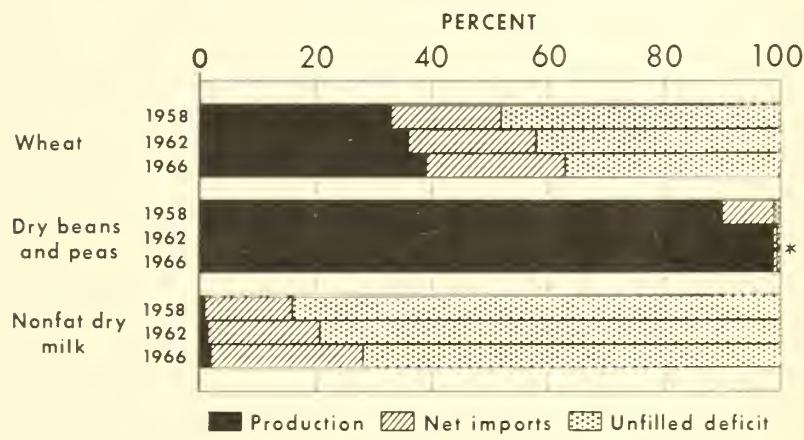
The situation is considerably different in Africa, West Asia, and Latin America. All have unused potentially arable land. In Africa, only a few such technological advances as tsetse fly control and better transportation and marketing facilities are needed to expand agricultural production in vast regions south of the Sahara. But in Latin America and to a lesser extent in West Asia, large land holdings are still retained in feudal tracts,

(Continued on page 16)

Africa and West Asia: Production and consumption of wheat and coarse grains, 1958, and projected 1962 and 1966

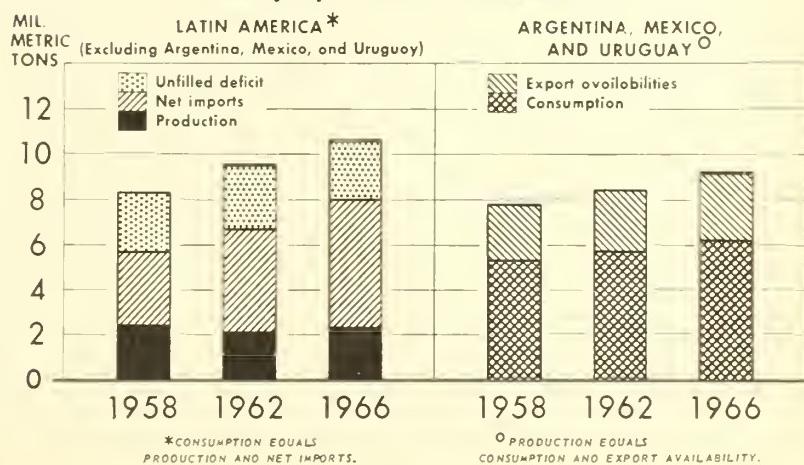


Far East: Production, net imports and unfilled deficit as percentages of requirements to meet nutritional standards for 1958, and projected 1962 and 1966



* IMPORTS 0.5 PERCENT AND UNFILLED DEFICIT 0.5 PERCENT IN 1962 AND 1966.

Latin America: Wheat production and requirements to meet nutritional standards, 1958, and projected to 1962 and 1966



How Diets Compare In India, Japan, and the United States

By LESTER R. BROWN
Regional Analysis Division
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The diet of a country is no longer of interest solely to its housewives or even its government. Interest in food and nutrition has acquired a new dimension—an international dimension. For the international comparison that follows, three countries have been selected, representing widely varying stages of economic development: India is at a fairly early stage, Japan is at an intermediate stage, and the United States is economically advanced.

How Much They Eat

Grain products completely dominate diets in Japan and India, but in the United States they are much less important. Although the overall level of food intake is much lower in both India and Japan, the per capita use of grain products is more than double that of the United States. In the cereals they consume, though not in most other food groups, Indians and Japanese enjoy much more variety than Americans do. Wheat accounts for most of the grain consumed in the United States, whereas in India the leading cereal, rice, accounts for only one-half of grain consumption and wheat, millets, corn, and barley account for the remainder. In Japan, rice accounts for two-thirds of total cereal intake and wheat and barley the remaining third.

In the consumption of roots and tubers, traditional dependence on white potatoes puts the United States several times higher than India but considerably lower than Japan. Indians consume roughly equal quantities of potatoes (both white and sweet) and cassava. On the consumer scale of preferences, however, cassava ranks very low, and with economic improvement its use is likely to decline. Japanese eat both white potatoes and sweet potatoes, but white potatoes are preferred.

Pulses, a rich source of vegetable protein and in part a substitute for animal protein, are used in comparatively large quantities in India and Japan. Increasing pulse consumption is associated with improved incomes in both of these countries, but in the United States the use of pulses (mostly beans and peas) decline as incomes rise.

Fruit and vegetable consumption in the United States is about double that of India and half again as high as Japan's. Advanced methods of handling, processing, transporting, and storing perishable foods reduce reliance on seasonal availability, and this contributes much to the greater use of these foodstuffs by American consumers.

Both the consumption of sugar and that of fats and oils, frequently good indicators of the level of living, are several times higher in the United States than in either of the other countries. But in one category, fish consumption, American levels compare much less favorably. An average American

eats slightly less fish than an Indian but only about one-eighth as much as a Japanese. Fish, an excellent source of animal protein, occupy a strategic position in the diet of land-scarce Japan.

In per capita meat consumption, the United States is so much higher than either India or Japan that it scarcely provides a basis for comparison. In fact, the poultry consumed by an American considerably exceeds the total per capita intake of all meats in either India or Japan. The extraordinarily high U.S. consumption of meat is illustrated by the fact that Americans have eaten more meat than bread in recent years.

The consumption of milk, like that of meat, is quite low in both India and Japan. Americans use about a quart of milk per day (much of it in the forms of butter, cheese, and ice cream), Indians only a quart every 12 days, and Japanese, little more than a quart per month.

In eggs too the differential is striking. An American eats about 1 egg per day on the average, whereas the Japanese average is closer to 1 per week and the Indian only about 3 per year. At least part of the low egg consumption in India is attributable to religious inhibitions concerning the use of animal products.

ANNUAL FOOD CONSUMPTION PER CAPITA, 1958

Food	India	Japan	United States
	Pounds	Pounds	Pounds
Grain products	304.9	344.6	148.6
Roots and tubers	22.0	173.3	¹ 105.7
Pulses	50.9	32.9	7.9
Fruits, nuts, and vegetables	146.2	208.6	297.3
Sugar	28.0	32.2	101.8
Fats and oils	11.0	7.9	² 41.0
Fish	13.4	88.2	10.7
Meat ³	3.1	9.0	186.1
Milk and milk products ⁴	72.3	31.7	⁵ 689.0
Eggs	.4	8.8	45.5

¹ White and sweet potatoes only. ² Includes peanuts consumed as food. ³ Includes soybeans and soybean meal consumed as food. ⁴ Dried peas and beans only. ⁵ Includes coconuts consumed fresh. ⁶ Excludes butter. ⁷ Carcass weight. ⁸ Whole milk equivalent. ⁹ Includes whole milk equivalent of butter.

Note: For food categories not completely comparable between countries, adjustments were made and, when necessary, estimates used.

Where the Calories Come From

Perhaps the outstanding feature in the diets from a calorie point of view is the preponderance of starchy foods in the Indian and Japanese consumption patterns and the relative lack of starches in the U.S. diet. Grain products alone provide about two-thirds of all calories consumed in India and Japan, and if roots and tubers are added, the percentages become 68 and 75 percent respectively. An American, by contrast, obtains about one-fifth of his calories from grain products and less than one-fourth even when roots and tubers are included. Americans currently derive

as many calories from the consumption of fats and oils as from grain products.

The distribution of calories according to food groups is likely to be one of the best criteria for evaluating the quality of diets. In the United States, four food groups other than grain products—sugar, fats and oils, meat, and dairy products—each contribute more than 400 calories per capita daily. In Japan and India, however, scarcely any group outside of grain products contributes even as much as 200 calories to the daily per capita intake.

The calories derived from all animal products including fish amount to just under 100 per person per day in India and about 135 in Japan, but nearly 1,000 in the United States or more than 30 percent of the total.

CALORIE DISTRIBUTION BY FOOD GROUPS, 1958

Food	India	Japan	United States ¹
	Percent	Percent	Percent
Grain products	65.1	66.7	20.7
Roots and tubers	2.9	8.2	2.1
Pulses	11.0	5.0	3.2
Fruits, nuts, and vegetables	4.0	3.4	6.1
Sugar	6.3	6.7	15.6
Fats and oils ²	6.3	4.1	20.7
Fish	.5	3.0	.3
Meat	.2	1.1	14.1
Milk and milk products ³	3.7	1.1	13.7
Eggs	(8)	.6	2.5
Total	100.0	100.0	100.0

¹Data for 1959. ²White and sweet potatoes only. ³Also includes nuts, soya flour, and cocoa. ⁴Includes coconuts consumed fresh. ⁵Excludes nuts. ⁶Includes butter and ghee, but excludes invisible fats. ⁷Excludes butter. ⁸Less than .05 percent.

How Much They Spend

Food expenditures per person vary greatly from country to country—an Indian spends less than 10 percent as much as an American. The share of total income spent for food varies from roughly three-fifths in India to two-fifths in Japan and roughly one-fifth in the United States. Considering expenditures in terms of labor requirements an American worker spends one-fifth of his wages, or 1 day's work of a 5-day work week, for food; a Japanese worker requires 2 days and an Indian worker 3 days of each week to purchase food.¹

Higher food expenditures by Americans reflect many differences, such as an overall greater caloric intake; more services in the form of packaging, prepared foods, processing, and transporting; greater variety; but, more than anything else, a markedly larger share of costly animal products, such as milk, meat, and eggs.

The food group allocated the largest share of income differs in each of the three countries. Indians spend 41 percent of their food money on grain—rice, wheat, and the minor cereals; the Japanese use exactly a third of their food money for the purchase of fish—their principal source of animal protein; and Americans spend more money on meats than on any other group of foods.

Perhaps the best single indicator of the nutritional quality of the diet is seen in the percent of food expenditure allo-

cated to the starchy food staples. Americans can purchase all the food staples required with only 12 percent of their food budget, whereas in Japan and India 37 percent and 42 percent are required, respectively. When related to total per capita income, this is even more striking: 2 percent of per capita income in the United States is required to purchase traditional food staples (largely bread and potatoes); in Japan, 14 percent, or about one-seventh of per capita income, is required to purchase the dietary mainstay (mostly rice); and in India 24 percent, or about one-fourth of per capita income, is reserved for the purchase of starchy staples (largely rice and wheat).

The share of food expenditures used to purchase animal protein foods—fish, meat, dairy products, and eggs—is not strikingly different. In India these groups account for 28 percent of total food expenditures, in Japan 47 percent, and in the United States 50 percent.

FOOD EXPENDITURES BY FOOD GROUPS, 1958

Item	India ¹	Japan ¹	United States
	Dollars	Dollars	Dollars
Per capita income	63.18	257.63	2,112.00
Food expenditures:			
Total per capita	35.62	94.37	388.04
Distribution:	Percent	Percent	Percent
Grain products	41.1	30.6	10.2
Roots and tubers	1.3	6.7	2.1
Other	—	—	(2)
Fruits, nuts, and vegetables	11.7	7.9	16.8
Sugar	3.2	2.3	3.2
Fats and oils	6.5	2.1	4.4
Fish	8.4	33.3	2.9
Meat	2.8	4.9	28.5
Milk and milk products	16.9	4.5	15.0
Eggs	.4	4.6	4.0
Pulses	7.7	3.1	12.9
Total	100.0	100.0	100.0
Percent of income spent for food	56.4	36.6	18.4

¹Computed by relating price relatives used by the Far East Analysis Branch to quantities as given in first table. ²Included in fruits and vegetables. ³Largely beverages.

Note: On-farm consumption is valued at market prices and included in food expenditures.

How To Correct the Deficits

This discussion of nutritional deficits treats only the basic nutritional indicators, namely, level of caloric intake, consumption of total protein (with animal, pulse, and vegetable protein considered separately), and consumption of fats and oils. The minimum recommended per capita caloric intake level, according to the world food budget study of the Department, is about 2,300 for Far Eastern countries and 2,640 for the United States. The per capita minimum recommended protein consumption for all countries was estimated to be 60 grams daily. Of this, the minimum animal protein contribution was 7 grams and the combined minimum total of animal and pulse protein was assumed to be 17 grams. The standard for fat was 38 grams per capita for the Far East and 43 for the United States.

According to these standards no nutritional deficits existed in the United States, but one deficit did exist in Japan, and India was deficit in all categories except pulse protein. Per capita consumption of fats and oils in Japan was 23 grams per day, or 15 grams less than the recom-

¹It must be pointed out, however, that the value of a day's labor varies greatly between countries.

mended level. Calculated on the basis of the expressed per capita deficit, 450,000 metric tons more of vegetable oils per year would bring average consumption up to the recommended level.

In India the food situation is much less favorable, for deficits exist in animal protein, other vegetable protein, fats and oils, and the level of energy intake. Per capita daily animal protein consumption in 1958 amounted to 6 grams, or 1 gram less than recommended. This deficit, expressed in terms of nonfat dried milk—a form of animal protein generally acceptable to Hindus—would amount to 422,000 metric tons annually.

The per capita fats and oils deficit in India, only 4 grams per capita per day, is much smaller than Japan's, but its elimination for the whole population would require 623,000 metric tons more of vegetable oil a year. Pulse protein consumption is more than adequate in India, but even after the animal protein deficit is eliminated, there is still a total protein deficit of 2 grams per person per day.

After the animal protein and fats and oils deficits are eliminated, the initial per capita calorie deficit is reduced to some 145 calories per day. If the remaining calorie deficit and "other protein deficit" are expressed in terms of wheat, an additional 11.4 million metric tons of wheat are required. About one-third of this quantity would eliminate the other protein deficit, and the remaining two-thirds brings per capita caloric intake up to 2,300.

The total cost of eliminating these deficits, in terms of nonfat dried milk for animal protein, soybean oil for fats and oils, and wheat for other protein and remaining calories, amounts to \$1.08 per capita per year in Japan and \$2.30 in India. On a national basis, Japan's only deficit—fats and oils—could be eliminated with an annual expenditure of some \$99 million. Filling the Indian deficit, however, would require nearly \$1 billion—a sum approaching the value of all the products exported by the country.

Given the rapid rate of growth in Japanese per capita income, the cost of filling the fats and oils deficit does not loom large; but in India, where per capita income increases slowly, the

Efforts Being Made To Work Out A Long-Term Coffee Agreement

The Coffee Study Group, which includes representatives both of coffee-producing and of coffee-consuming countries, is intensifying its efforts to develop a long-term coffee agreement. When it met in Washington in late September, it renewed for one more year the 1960-61 agreement scheduled to expire on September 30, but this will be replaced by a long-term agreement if one is developed and approved before next September 30. This "extended" or "interim" agreement set individual country quotas for October 1961 through March 1962 at the same level as a year ago.

Since 1957, when representatives of seven Latin American countries met in Mexico City and agreed to limit exports of coffee, there has been some type of year-to-year coffee agreement among exporting countries. Each year the coverage has been broadened. Nine out of each ten bags of coffee now entering world trade are exported by countries belonging to the agreement. In addition to the Latin American producing countries, most major producing African countries have participated in the past 2 years. So far, importing countries have not been members of the coffee agreements, but a long-term agreement would in all probability include them also.

The year-to-year agreements have been partly successful in bringing

about a reasonable degree of orderly marketing and price stability but in reality they have only been "stop gaps." The heart of the coffee problem is the continued accumulation of surpluses, which the 1-year agreements have not checked.

Actually, world surpluses are now at the highest peak in history. The world's carryover of coffee at the end of the 1960-61 season, September 30, was about 75 million bags (132.3 lb. each), the equivalent of 1-3/4 year's usual world exports. The 1961-62 crop is estimated at 76 million bags, only slightly below the record 78 million in 1959-60. Such a crop would be far in excess of any foreseeable needs for the current season, and an additional 15-20 million bags would probably be added to the world surplus.

This continued build-up of coffee surpluses and the importance of coffee to the economies of many of the producing countries make the coffee problem a very important one. There seems to be almost complete agreement among the major coffee producing and consuming countries that a long-term agreement is now justified. The United States, which has taken an active role in the Coffee Study Group since its formation in 1958, has indicated a willingness to assist in the development and implementation of one.

A committee named by the Study Group is now developing a draft proposal of a long-term agreement for review and study by member countries of the Study Group, after which the Study Group will meet again. The recent meetings in Washington did not constitute a negotiating conference but did develop a "Set of Principles" to serve as guidelines for developing the draft proposal.

There is general concurrence that a workable long-term agreement would require some cutback in production. Along with this would probably come intensified efforts to raise the level of world coffee consumption—currently around 55 million bags per year. Presumably, any new long-term agreement would provide funds for stepping up promotional campaigns.

PER CAPITA ANNUAL COSTS OF FILLING CHIEF NUTRITIONAL DEFICITS IN INDIA AND JAPAN

Item	India	Japan
Animal protein (in terms of nonfat dry milk solids) ..	0.27	0
Pulse protein (in terms of dry beans and peas)	0	0
Fats and oils deficit (in terms of vegetable oils)....	.39	1.08
Other protein and "remaining calorie deficit" (in terms of wheat)	1.64	0
Total	2.30	1.08

Note: Costs of eliminating the deficit are based on 1958 U.S. export prices for the items.

Right, on this West German farm, modern and well-kept-up buildings form a quadrangle where cars and farm machinery are parked. Such equipment is not available for the few privately owned farms that are left in East Germany.

By ALEXANDER BERNITZ
and WALTER STERN
Regional Analysis Division
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German Agriculture—East and West

Since World War II agriculture in East and in West Germany—separated by the Iron Curtain—has developed along different lines and attained different degrees of prosperity.

West German agriculture is far ahead of its counterpart, with higher yields and greater productivity; and the people of West Germany are enjoying a steady improvement in the quality of their diet. The East German government has optimistic plans to catch up with West Germany in domestic per capita production and consumption of agricultural products, but these plans have little likelihood of succeeding in the foreseeable future.

Results of the past decade indicate that West German agriculture, functioning on a free enterprise economy, has been able to adjust itself more readily to changing conditions than has East German agriculture, functioning on a socialized planned economy.

One reason for this different response may be the willingness of the West German farmer to work extra hours when necessary to protect his own interest—a fact that also helps to account for the steady increase in West German agricultural production since the war. In contrast, the collectivized East German farmer has lacked the incentive—despite all pressures from his government—to increase his workload; and this attitude has contributed

to the slow and uneven recovery of East German farm output.

What has been going on in East and West German agriculture shows up clearly in a point-by-point comparison of such important factors as population and labor force, land tenure, mechanization and fertilization, land utilization, crop yields, crop and livestock production, and the food situation.

Population and Labor Force

The prewar population of East Germany was about 16.5 million. This increased soon after the war to about 19 million, with the influx of some of the millions of displaced Germans



On most East German collectives, work is hard and pay low. Large machines are reserved for collectives and state farms, but the supply is insufficient.



from the Czech Sudetenland and the Polish-occupied territories east of the Oder-Neisse line. However, since 1948 the population of East Germany has been declining, mainly through flight to West Germany. By the beginning of 1960, it was about 17.3 million. In contrast, the population in West Germany, which received the greater number of displaced Germans in the early postwar period, increased from about 41.3 million before the war to 48.2 million in 1948 and to 55.3 million by the beginning of 1960.

Both East and West Germany have had a migration of farm labor from the rural areas to the industrialized urban areas. However, where West Germany has largely compensated for this loss through farm mechanization and other labor-saving adjustments, East Germany has done so only to a small extent, and its agriculture has been damaged by the movement of experienced farmers both to the cities and to West Germany.

Land Tenure, Working Conditions

In West Germany, farms are privately owned and operated, now as they were before the war.

East Germany, however, has experienced a complete shift from privately owned and operated farm units to state-owned and collective-type agriculture, which now accounts for about 95 percent of total crop acreage. No private farms are left, though collective farmers are permitted small privately-owned plots of about 1½ acres.

The East German socialization of agriculture has sharply reduced incentives for more production. The East German government has increased agricultural investments in recent years, providing more tractors, fertilizers, and

farm construction for the state and collective farms; but it has offered little financial incentive for the farm worker, whose pay is relatively poor.

The exodus of many farmers to West Germany suggests that farm living conditions in East Germany are unsatisfactory. The collective farmer is currently demanding what the government initially promised him: the same compensation as the factory worker. Reports suggest that he is reinforcing his demands by working less for the collective; that is, by deliberately slowing down his hourly output and spending more time on his privately owned and operated plot.

West Germany, on the other hand, has maintained production incentives through the pricing mechanism and government subsidies; and reports indicate that farm living conditions have improved since prewar years, though a disparity still exists between farm and industrial incomes. Current West German government programs are aimed at correcting this problem.

Mechanization and Fertilization

The private agriculture of West Germany has increased tractor numbers to approximately 25 times the prewar 30,000. In East Germany, the number of tractors is only 3½ times the 20,000 of prewar years, in spite of the acute farm labor shortage and the effectiveness that mechanization could have on the large state and collective farms.

Arable land per tractor before the war was 638 and 703 acres in East and West Germany, respectively. By 1959, East Germany was working 166 acres per tractor; West Germany, 26.

The expanded agricultural output of West Germany has resulted in part from the increased use of commercial

fertilizer. East Germany, the prewar leader in fertilizer application, had stepped up its total consumption by 1958-59 to 132.2 pounds of plant nutrient per acre of agricultural land—about 36 percent over prewar levels. Meanwhile, West Germany had surged ahead with 138.8 pounds—a 63-percent increase.

Land Utilization

In both regions there has been a decrease in total sown acreage since the war—from 12.5 million to 12 million in East Germany and from 21.3 million to 19.7 million in West Germany. The reason is the growing need of land for nonagricultural uses.

Within this diminished area, East Germany has shifted acreage from both food and feed grains to industrial crops (chiefly oilseeds) and forage crops.

West Germany has increased its wheat, barley, and sugar beet acreages. These increases have been more than offset by decreases for other grains, potatoes, feed roots, and forage crops.

Crop Yields

Whereas before the war East Germany surpassed West Germany in yield per acre of practically all major crops, today the situation is reversed. For all the principal crops, yields in West Germany are considerably ahead of those in East Germany. These gains are due to better cultural practices such as increased use of fertilizer, quality seeds, and mechanization.

In East Germany, meanwhile, yields of grain have risen relatively little above the prewar level, while the yields of potatoes, sugar beets, and oilseeds have actually declined. This decline or stagnation of crop yields can be attributed in part to the insufficient capital investment and outlay that have been allocated to the region's socialized agriculture for fertilizers, seed control, and mechanization. Of considerable importance also are the exodus of trained agriculturists to West Germany and the greatly reduced incentive that has resulted from collectivization.

Crop and Livestock Production

Total agricultural production in East Germany is currently about equal

(Continued on page 22)

YIELDS OF SELECTED CROPS IN EAST AND WEST GERMANY

Crop	Unit	East Germany		West Germany	
		Average 1935-38 ¹	1960 ²	Average 1935-38 ¹	1960
Wheat	Bushels	40.6	48.6	36.4	52.9
Rye	do	29.8	33.6	32.1	45.9
Oats	do	65.9	73.6	63.5	81.1
Barley	do	47.8	56.9	43.3	61.2
Potatoes	Cwt	169.7	157.9	165.0	210.4
Sugar beets	Tons	13.0	11.9	14.6	18.7
Oilseeds ³	Pounds	1,303	1,285	1,490	1,918
Tobacco	do	(4)	839	2,355	1,257

¹ Official yields for grains and potatoes increased by 10 percent in accordance with re-evaluation by West German Institut für Landwirtschaftliche Marktforschung. ² USDA estimates except for oilseeds and tobacco. ³ Primarily rapeseed. ⁴ Not available.

Peru: Prosperity and Problems

By CLARENCE E. PIKE
U.S. Agricultural Attaché, Lima



Above, sorting pima cotton and left, fishing boats in Paita harbor. Peru is world's No. 1 fishmeal exporter.

Peru's prosperity is steadily growing, while the living standard of almost half the Peruvian people is lessening. How to bring the fruits of this economic growth to more people is the essential problem facing the Peruvian Government.

Peru's economic development in the past few years has been impressive. Increased production by major export industries in 1960 resulted in a record export surplus of \$55 million. Three years earlier there had been a deficit of \$70 million. Export earnings for 1961 continue at a high level.

In 1960 copper displaced cotton as Peru's principal export. Copper exchange earnings—only \$25 million in 1959—had risen to \$90 million by 1960. This was largely the result of production from the new Toquepala mine in the southern Andes. The mine, which is being worked by a subsidiary of several American companies, is one of the world's largest.

Peru's mountains have been famed since the days of the Incas for the richness of their mineral deposits. From them come important exports of silver, lead, and zinc. Peru is one of the world's largest producers of vanadium. Iron ore production has gone up: exports not only jumped from \$20 mil-

lion in 1959 to \$34 million in 1960, but Peruvian iron ore now supplies the country's new steel industry.

Normally about a third of Peru's foreign exchange earnings come from agricultural exports. For a number of years, cotton was Peru's leading export—and even now makes up about 20 percent of total exports. Although the volume of cotton exports declined in 1960, earnings went up \$5 million to \$74 million because of better prices on world markets.

Much the same thing happened to sugar exports. They also decreased in volume during 1960, but due to improved world prices and larger sales in the U.S. market, sugar earnings rose from \$36 million in 1959 to \$44 million in 1960.

Peru, which has become the world's leading producer of fishmeal, exported a record \$50 million worth of fish and fish products.

Fish processing industries loomed large among the 353 new firms which began operations in Peru during 1960. These new firms represented investments of approximately \$11 million—of which 22 percent went into food processing industries, 19 percent into machinery, 13 percent into chemical products, and 11 percent into textiles.

No small part of this considerable industrial growth has been the direct result of Peru's new Industrial Development Law which offers incentives to new business. A wide variety of new industries are in the planning stage.

Nevertheless, the Peruvian government must look largely to agricultural development and reform, at least initially, to raise low living standards in a nation some two-thirds of whose population is dependent upon agriculture—and 35 percent of whose total national product is agricultural.

In 1959-60 farm output exceeded that of any previous year. Long staple cotton, sugar, and rice production along the coast was at record levels. Production of coffee, cacao, tea, and other tropical products is increasing rapidly; meat, milk, wheat, corn, barley, and other crops are also making gains.

Drought, freezes, and other unfavorable weather conditions, however, resulted in severe losses in grain and potato crops in some sections of southern Peru in 1959-60. This seriously affected the livelihood of almost 1 million small-scale farmers, the part of the population that is the least able to bear the burden.

The government is making a serious effort to improve the livestock indus-

Left, mountain road with snow-capped Andes in background. Below, market scene near Lake Titicaca, the world's highest lake.



try, with particular emphasis on meat production. A considerable quantity of quality breeding stock has come from the United States and Canada. Four hundred Brown Swiss and Holstein-Friesians bought in the United States in 1960 are doing so well that additional U.S. purchases are being considered. Removal of retail price controls and governmental meat subsidies in 1959 resulted in moderate increases in meat production, aided by improved feeding and other production practices.

Despite increased farm output, Peru must import many agricultural products—which make up approximately 20 percent of its total imports. These are chiefly wheat, fats and oils, meat, dairy products, tobacco, live animals, hides and skins, fruits, vegetables, and various canned and packaged products.

The United States is by far the largest supplier of Peruvian imports, though the U.S. share of the Peruvian market has fallen from 56.1 percent in 1952 to 44.9 in 1960. West Germany, various other European countries, and Japan are making increasing gains.

About 13 percent of Peru's total imports from the United States in 1960 were agricultural. Wheat is the principal agricultural import from all sources, including the United States.

Wheat imports are likely to increase in the next few years to meet the needs of Peru's rapidly expanding population. So far, even Peru's greatly increased agricultural output and stepped-up farm imports have not done so. Daily

per capita caloric intake is going down from the estimated 2,040 units in 1958; grains and starchy foods make up a growing percentage of total intake.

One of the principal reasons for the widespread poverty is the isolation of the large number of people living in the mountains. These farmers, most of whom are Indian, are unable to market the products raised in small valley plots and on the terraces they have created on steep mountain sides with such infinite care and patience.

In an effort to bring these outlying districts and their people a greater share in Peru's growing economic strength, the government has begun a road building and repair program. Roads already constructed are opening up agricultural lands never developed because of inadequate transportation. Railroads, also, are to be extended.

A significant item on Peru's agricultural agenda is agrarian reform legislation introduced in Congress in September 1960, and still awaiting legislative approval. The bill's purpose is to achieve the maximum effective use of Peru's land resources and to raise rural living standards. Expropriation and redistribution of lands are to extend over a 10-year period, in order to avoid disrupting the present rural economy through too precipitate application of the bill's provisions. This program would cost the nation approximately 3 percent of its annual budget for the 10-year period.

The most ambitious proposal to date

is a series of regional economic development programs to bring to life hitherto inaccessible, unproductive parts of the country, and provide new homes and employment for Indian farmers. This is known as the Peru-via plan.

The first region chosen for pilot development is a stretch of so-called high jungle in central Peru. The area was chosen because of its diversity: Valleys for agricultural development; lower Andean slopes for forestry; intermediate slopes for industrial communities; and high slopes and plateaus for cattle-raising.

A vast hydroelectric plant is proposed for a bend in the region's Mantaro River, credited with one of the world's greatest potentials for water power. This is envisaged as the heart of the east-Andean industrialization.

The U.S. Government has authorized a \$53.2-million loan to help finance the program; Peru's 1961 budget allocates \$9.4 million to begin work. The Peruvian Congress has authorized the government to borrow up to \$225 million to finance public investments.

This massive development program is expected to provide a powerful stim-



Above, this earth dam is part of the Quiroz-Piura scheme which will add 100,000 acres to Peru's irrigated area. Right, starting work on a new hydroelectric project just outside Lima.

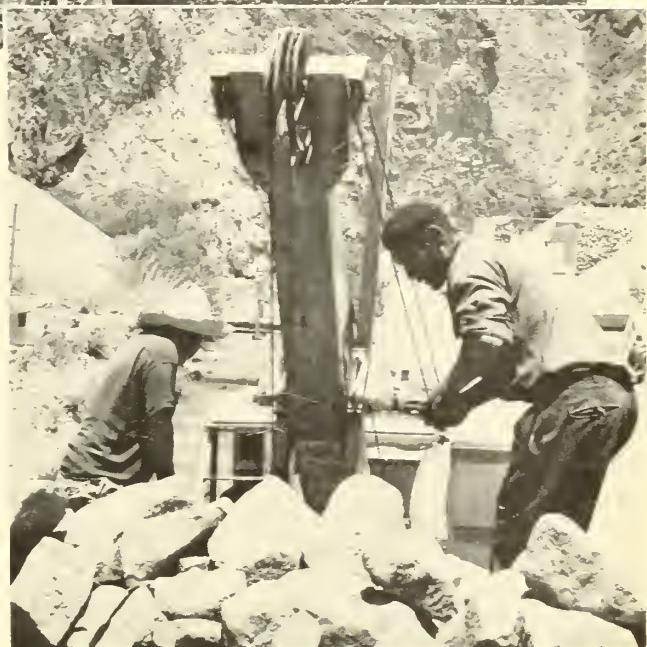
Photos, World Bank
and Pan American Union

ulus to the entire economy of the country. Also, the U.S. and Peruvian Governments are now evolving a treaty on double income tax avoidance which, if implemented, would provide additional impetus to investments in Peru.

Irrigation of the 125,000-acre Quiroz project has been completed and a beginning is being made in the distribution of the land to the farmers. A number of other smaller irrigation projects are nearing completion.

Peru's economic progress to date—and the magnitude of the country's plans—may result eventually in a different agricultural import pattern.

The current outlook, however, is that for some time Peru will be an expanding market for wheat, vegetable oils, lard, meat, and, frequently, rice. Since there are no restrictions on the use of foreign exchange and no import restrictions other than tariff duties and internal charges, purchase of these commodities will be made from sources offering the best prices and terms of trade. In addition, there will continue to be a large demand for food and other agricultural items which cannot be satisfied through commercial means.



U.S. Agricultural Attaché Clarence Pike, center, and Peruvian agriculturists sign agreement setting up U.S. livestock demonstration project.





Left, mountain road with snow-capped Andes in background. Below, market scene near Lake Titicaca, the world's highest lake.



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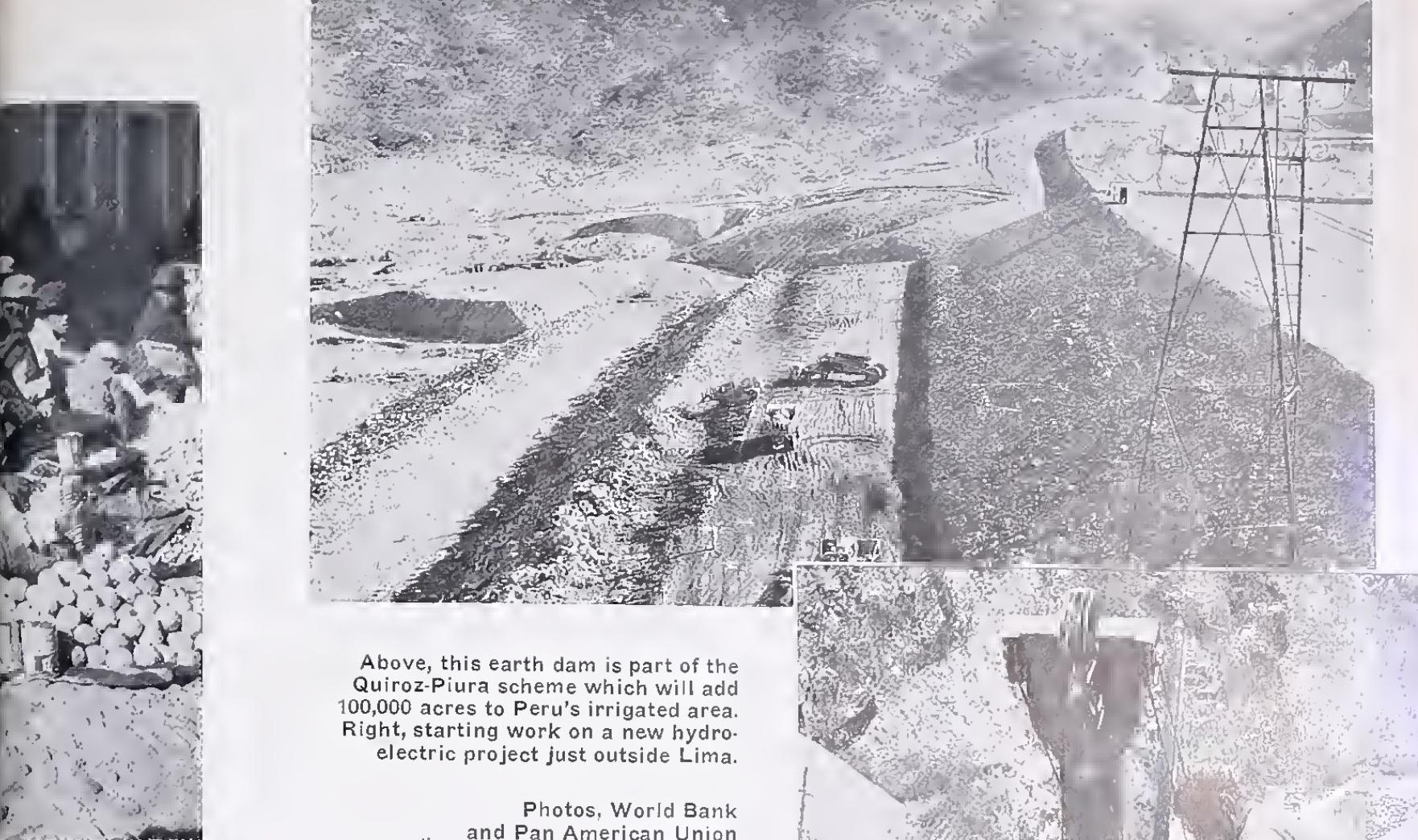
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Above, this earth dam is part of the Quiroz-Piura scheme which will add 100,000 acres to Peru's irrigated area. Right, starting work on a new hydroelectric project just outside Lima.

Photos, World Bank
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U.S. Agricultural Attaché Clarence Pike, center, and Peruvian agriculturists sign agreement setting up U.S. livestock demonstration project.



The Agricultural Paradox

Today the world's No. 1 agricultural task is to close the gap between present and potential output in the underdeveloped countries. Here Dr. Sherman E. Johnson points to ways this can be done, considering at the same time the welfare of farm people.

For the first time in the history of the world, it is physically possible to provide adequate food supplies for all its inhabitants. In most—though not all—of these less developed countries, adoption of improved farm technology would result in tremendous increases in food output. But despite this physical possibility, the great masses of people in these areas are living on the margin of subsistence. Their entire lives are occupied with the struggle for "daily bread." Freedom from want is a prerequisite to enjoyment of other freedoms; and inability to attain this first freedom endangers both the economic and the political stability of many countries.

In striking contrast to the struggle for bare subsistence in the less developed areas is the abundant production in the areas of highly commercialized agriculture, resulting from adoption of improved technology. Largely because of rapid increases in physical efficiency, production has exceeded available markets, and farm people in commercial farming areas are not receiving their proportionate shares of the fruits of progress.

A world view of the present agricultural scene, therefore, presents a double paradox.

Although some temporary relief for food-shortage areas can be provided from the abundant production of commercial farming areas, the long-term solution must be sought through expansion of food production within most of the countries that are faced with shortages.

If the urgent need for expanding food production in the less developed areas is recognized, how can this expansion be achieved most rapidly and most effectively?

This article is adapted from the talk given by Dr. Johnson at the 11th International Conference of Agricultural Economists, in Cuernavaca, Mexico, this past August. Dr. Johnson, of the Economic Research Service, USDA, was president of the Conference.

Because of the shortages of management and technical skills and capital, the food-expansion programs will need to be planned to make the best use of these resources in combination with abundant supplies of unskilled labor.

Some of the less densely populated countries have additional land that is accessible to markets and that could be developed largely by settler self-help if technical and management assistance and credit were provided. Frequently, however, undeveloped land requires expensive drainage, clearing, and irrigation. Scarcity of management and capital, therefore, may virtually close this route to expansion of food production in the early stages of development, unless it is a part of a multipurpose development program or can be developed largely by hand-labor methods.

No Universal Remedy

Fortunately, most areas have great physical potentialities for increasing output per hectare on land now cultivated if suitable combinations of improved techniques are applied. The ratio of capital expenditure to added output will be relatively low, and maximum use can be made of management and technical skills.

There is, however, no universal remedy for closing the gap between the present low output and the physical possibility. Achievement will depend primarily upon the efforts made to help farm people adopt the new ways of farming. The first requirement is to make sure that those who till the soil will benefit in better living.

To induce farm people to break with tradition will mean gaining the confidence of at least a small nucleus of farmers who are willing to become innovators and to help persuade others to follow their leadership. This first effort usually means working with farm families on a case-by-case basis to help them visualize the income to be gained by adoption of improved farming

plans. The persons assigned to this task must know how to stimulate and inspire farm people; they must also possess the technical and managerial skills that will be needed to help farm families carry out the new plans.

An effective technological breakthrough will require adoption of farming plans that include a combination of improvements. For example, if improved seed and adequate supplies of chemical fertilizer and pesticides are used, and if good water management, timely tillage, and other practices are adopted as a combined production program, startling increases in output can be expected in many areas.

But if farmers are to adopt such combinations, the necessary supplies of seed, fertilizer, pesticides, and other materials must be available in adequate quantities when they are needed. Chemical fertilizer and other supplies are not likely to be available in adequate quantities unless plans are made for their manufacture within the country as a part of the industrialization program.

Operators of the larger farms, who have financial resources to invest in the new technology, can increase output as soon as they are convinced that it will pay. They should be encouraged to do so, in their own as well as in the national interest. But because most subsistence farmers have neither financial resources of their own nor credit available at reasonable rates, new credit arrangements will need to be organized. Credit should be based on potential production and income from an improved farming plan, together with an appraisal of the operator's competence, rather than on the farmer's existing assets.

Also, many farmers operate so close to the margin of subsistence that they cannot afford to take the risk of either crop failure or lower prices. Some method of crop and price insurance will need to be devised. In a few

areas, repayment schemes have been developed which require repayment of loan advances only from the increase over customary production per hectare. In most areas, assistance will be needed also in transporting, storing, and marketing the increased output.

The Package Program

The simultaneous adoption of all the measures essential to achievement of large increases in output per hectare has been called "the package program" in a pilot undertaking in India. Somewhat similar pilot programs in other countries indicate the potentialities of this approach.

Perhaps the outstanding example is the 25-percent increase in output in Japan during the interwar years, which followed a doubling of output from 1878-82 to 1913-17. These increases resulted from application of new technology, largely within the existing structure of farming. The Japanese peasants shared only partly in the benefits of the increase in output during this period.

The post-World War II experience in Japan, following land reform and more favorable prices, indicates that expansion might have been even more rapid in the earlier years if rural institutions had been changed to permit the peasant to share more fully in the fruits of progress. In 1960, Japanese agricultural production was about 45 percent above the average of the years 1952-54, a period in which agriculture had recovered to the immediate prewar levels.

Mexico made an equally rapid increase in these years. Experience in several other countries indicates that rapid increases in farm output can be achieved by providing more adequate economic and other incentives to those who till the soil.

In some countries, farm output has expanded on plantations or other forms of large-scale operation. These farm units, however, are usually found in the midst of subsistence farming areas. The wages paid to workers, therefore, need only to compete with the income alternatives in subsistence farming.

Unless the interests of workers are adequately protected, developments of this type do not achieve the aim of better living for all citizens. Economic

and political instability are eventually created by the dissatisfaction of workers with subsistence wages and living conditions. An appropriate characterization of such an environment would be the quotation from Oliver Goldsmith: "Ill fares the land, to hastening ills a prey, where wealth accumulates, and men decay."

Nevertheless, when high production has been achieved under large-scale farming operations, enforcement of landownership ceilings and distribution of the excess land to the workers are likely to result in a temporary reduction of output. In this situation, problems of equity conflict with the national need for larger output.

Protecting the Bargainers

Because of the great need for increasing rather than decreasing farm output in the takeoff stage of economic development, consideration might well be given to alternative ways of protecting the *weak bargainers* in rural society.

There is now general recognition of the need for approximate equality of bargaining power in order to achieve wage bargains that are advantageous to both employer and employee. Sometimes organizations of workers on the one side and of employers on the other side achieve the bargaining power necessary for their own protection. At other times, government intervention is required to protect the weaker group against exploitation in the bargaining process.

The principle of the need for protection of the weak bargainers in economic society is involved in both land reform and alternative ways of improving conditions for wage labor. Land reform requires government intervention to provide adequate incentives for those who till the soil. What other methods are available for protection of rural workers against exploitation?

Consideration might be given to requirements for payment of a minimum wage, provision of minimum housing, a plot of land for a garden, access to health services, and an opportunity for the education of children. Government expenditure would be involved for health and education. The other obligations would be met by the operators

of large farms in preference to imposition of land ceilings.

Improvement of conditions for wage workers on large productive farms can be instituted at the time subdivision programs are undertaken on potentially productive land that is held in large ownerships but is neglected or still relatively underdeveloped. A public works program for development of neglected lands into independent productive units for farm families would provide work for surplus labor in slack seasons.

In many densely populated areas, it is not feasible to provide separate tracts of land for all rural families. In India, for example, available data indicate that only about 5 acres of net cultivated land are available per family dependent on agriculture, and that only about 1 of the 5 acres is irrigated land. It is apparent that, eventually, substantial income improvement for the landless and for those who have too little land will need to be sought in nonfarm employment. Until such opportunities are available, however, it will be necessary to provide as productive employment as possible in agriculture.

It is frequently suggested that cooperative or other group operation of the land constitutes a solution to the problem of fragmented holdings and too little land per farm family. But joint undertakings of this type do not create more land per family. And they may remove the incentive of individual attention by the operator to his parcel of land.

Productive Employment

Relatively unskilled labor is the most abundant resource in densely populated countries. The greatest need, therefore, is to find productive employment for underemployed labor—employment that will result in a larger total output. Substitution of machines for excess labor will not increase production per hectare unless the machines are necessary for more effective tillage or for some other farm operation.

The nub of the problem is to find the combinations of management, labor, land, and capital resources that will make the most productive use of abundant labor in increasing total output. Management, land, and capital

are the scarce factors. Therefore, the most productive combinations are necessarily labor intensive but designed to use all factors as efficiently as possible to increase total productivity. The national welfare will not be enhanced by mechanization that substitutes scarce capital for the abundant labor that would remain unemployed.

A further reason frequently cited as an indication of the need for group farming is the lack of technical and managerial skills among operators of small farms. Capable assistance in development of technical and management skills is greatly needed, but such assistance can be combined with supervised credit and other aids needed by operators of small farms without removing the incentive inspired by the satisfaction of land hunger.

Security of tenure on a parcel of land represents the only security known to a family living in a subsistence-farming society. Certainly, the validity of Arthur Young's dictum that "the magic of property turns sand into gold" has been verified in many areas where farm families have had an opportunity to reap the fruits of their own labor on a plot of ground and to enjoy those fruits "under their own vine and fig tree."

Last Great Frontier

(Continued from page 5)

often by absentee owners. Land reform is urgently needed to redistribute acreage more equitably among farmers and strengthen their incentives to produce.

Lack of chemical fertilizer.—Lands farmed for generations without soil amendments are the primary reason for low yields throughout the Southern Area, but especially in the Far East. There is no question that these soils can again be made more productive by proper tillage, use of improved seeds, and proper amounts of fertilizer.

The critical problem is lack of chemical fertilizer. The world food budget study shows that to satisfy nutritional standards for the people of the Southern Area in 1962 would require, among other nutrients, the equivalent of some 29 million tons of wheat over and above the quantity

projected for consumption from domestic production and imports.

To produce 29 million tons of wheat equivalents on land presently available would take 3 million tons of chemical fertilizers: two-thirds nitrogen and one-third phosphoric acid. To build enough fertilizer plants to produce this quantity of chemical fertilizer within the consuming regions would cost \$1.65 billion. This is equal to the entire gross national product of such countries as Burma and Malaya. Even for the Southern Area as a whole it would be a staggering financial outlay. Nevertheless, increased output and use of chemical fertilizers is the touchstone to the entire area's agricultural future.

Human Goals

Many Southern Area countries are long established republics. Some are newly independent. Still others are looking toward statehood in the immediate future. All are aware of the magnitude of the problems confronting them as nations and as part of an old and generally devitalized area. The initiative must be theirs. But it is incumbent on the industrialized nations of the North, which traveled the same road not so long ago, to help provide the essential technical, educational, financial, and, indeed, moral support.

The task, while formidable, is not unachievable, and the rewards are beyond measure. The hope is that the Northern Area's achievement will be extended rapidly to the remaining peoples of the earth, so that at the close of this century or sooner no man need lie down hungry, or see his children waste away through malnutrition. If men climb mountains because they are there and science compels the conquest of space, surely this is the most compelling of man's last great uncrossed frontiers.

"*The World Food Budget, 1962, and 1966*" is a 78-page publication, containing 10 charts and 25 tables, supporting the study's projections of the world's food deficit. It may be bought for 40 cents from Superintendent of Documents, U.S. Government Printing Office, Washington 25, D.C.

Horsemeat Gains in USSR As Horse Numbers Drop

Old Dobbin's lease on life in the USSR is increasingly menaced by farm mechanization and the need for horsemeat to satisfy food deficits.

Horse numbers in the USSR have steadily fallen from the 1953 high of 15.3 million to the 1961 total of 9.9 million. This is the lowest point reached since 1943-44 when the German invasion had destroyed millions of animals of all kinds.

Meanwhile, the number of tractors in the USSR has swelled to 1.09 million in 1960 from 744,000 in 1953. Interestingly enough, between 1958 and 1960 the number of tractors rose by 90,000 and the number of horses dropped by 900,000—indicating the displacement of 10 horses by one tractor.

Nor was Dobbin permitted to grow old gracefully in retirement. Instead he made it from furrow to ragout in one easy leap. Horsemeat production rose from 276 million pounds in 1953 to 430 million in 1959, making the Soviet Union the world's leader in the output of horsemeat.

A number of Soviet leaders have hailed the tasty qualities of horsemeat, and urged its consumption at home and in satellite nations. They may have cited as justification the fact that France, with culinary prowess second to none, was the world's second largest producer of horsemeat, with a 1960 output of 229 million pounds.

However, there may be some equine comfort in the fact that 20 to 30 percent of all agricultural work in the Soviet Union is still done with horses and horse-drawn implements. On collective farms in the central and northwestern zones, 51 percent of potato planting, 70 percent of mowing, 97 percent of hay stacking, 73 percent of potato harvesting, and 19 percent of row crop cultivation still require horse-drawn equipment—and may go on doing so, since farm labor is ample.

In the United States, where horsemeat is used for pet food, 1960 production was less than 50 million pounds, the number of horses and mules—mostly pleasure animals—less than 3 million, and the number of tractors, 4.7 million.

A Supermarket for Nairobi

Kenya's capital city is the site of this British colony's first supermarket which sells everything from cake mixes and soap to baby clothes and cosmetics.

By ROBERT E. ADCOCK
U.S. Agricultural Officer, Nairobi

A casual chat with a U.S. agricultural attaché led to the establishment last spring of Kenya's first supermarket, stocked with a full line of grocery items, including some 500 commercially imported from the United States for the first time.

The story of this supermarket goes back to when Gordon Schlubatis, now our attaché in Turkey, was stationed in East Africa. He then patronized a small but prosperous grocery store in Nairobi known as the Economic Fresh Provision Stores, Ltd. Its managers, a trio of Indian brothers, often discussed American merchandising methods with him and were particularly curious about supermarkets.

Plans were laid in 1959 to do something about the supermarket idea. Two of the brothers, Akbarali and Taj Nanji, went to Europe to study supermarkets there. Schlubatis got in touch with USDA and a training program was planned for the third, Sultan Nanji, to study U.S. supermarkets and the devices that make them tick—from buying to selling. A chain of contacts was set up to take Mr. Nanji into supermarkets in 26 States between February and May 1960. In May the brothers compared notes. On each point, Sultan Nanji said, American techniques were best.

Within a year of their return, the Nanji brothers opened their Nairobi supermarket, the first in a projected chain. The same number of clerks employed in the old Economic could handle between 4½ and 5 times as much business in the supermarket. Overall costs were cut 25 percent. Five times as many customers could be accommodated and each would be spending more money.

"In the conventional store," one of the brothers explained, "a customer brings in a list, reads it off to one of the clerks, waits until the goods are placed in his kikapu [basket], pays his



Above, Kenya's first supermarket, an African outlet for U.S. goods. Below, the Aga Khan, second from left, visits the Nanjis at store's formal opening.



ticket, and leaves—making no additional purchases. Now, in the supermarket, we use big American-type basket carts and a few small carry-type baskets of European origin. In addition to items on the list, there is a tendency to keep picking things up."

From 1,500 to 2,000 customers go through the supermarket daily Monday through Thursday. On Fridays and Saturdays, there are from 2,300 to 3,500 per day. Each person spends an average of £1 (\$2.83). The Economic can only accommodate 550 people a day.

Pricing policies in the new market are very much like those in U.S. supermarkets. "We are pricing as low as we think we can," Messrs. Nanji tell cus-

tomers, "but if you find another as cheap or cheaper, let us know. We can sell as low as anyone—if not lower."

Eighty-five percent of the new market's customers are Europeans, 12½ percent, Asians, and only 2½ percent, Africans. The lack of money and a traditional shyness on the part of Africans are responsible for their low patronization of the revolutionary store. Taj Nanji remarked, however, that Africans are gradually learning to feel at home because every worker tries to make them welcome; and his brother Sultan pointed out that those who are trading at the supermarket are varying foods in their diet as they discover new products within their means.

Yugoslavia—A Mixture Of Peoples, Products, Resources

By ARMIN J. REHLING
U.S. Agricultural Attaché
Belgrade, Yugoslavia



Photos by T. Shambaugh and H. Koeller



Above, 40 bushels of wheat per acre are not uncommon on the large farms occupying most of the rich alluvial plain northwest of Belgrade known as the Voivodina.

Left, sugar beets raised in the Voivodina go to the mills for processing. Since 1946 the sugar demand has tripled.

Modern Yugoslavia, or much of it, was once part of ancient Macedon. Such was the infinite variety of Macedonia's people and plants that the French began using the word, *macédoine*, to describe a dish combining different vegetables, or fruits.

Even now, Yugoslavia, with an area one-thirtieth the size of the United States (not counting Alaska and Hawaii) and a population one-tenth that of the United States, produces a variety of agricultural products far out of proportion to its size. This diversity is a natural concomitant of the country's location: Stretching from the Austrian Alps to the Greek frontier, bounded on the northeast by the exposed plains of Hungary and Rumania, and on the west by the warm Adriatic, but partly

shut off from this influence by western mountain ranges.

The climate in the northwest is suited to the production of small grains, hops, and fruit. The alluvial plain stretching north and west of Belgrade, known as the Voivodina or bread basket, has a climate similar to that of the U.S. Corn Belt. Yields of 100 bushels of corn to the acre and 40 bushels of wheat are not uncommon. Sugar beets, sunflowers, and a variety of other crops do well. Macedonia in the south grows oriental tobacco, cotton, and sorghum, plus grapes and other fruits. Along the Adriatic are olives, grapes, citrus, and a wide variety of native plants. Many of these native plants grow wild, but their harvest furnishes income to the people.

Yugoslavia has a "you name it, we have it" agriculture. Some crops are not of significant importance, but somewhere in the country they may be found.

The following list of crops is not necessarily complete or in order of importance, yet it illustrates the extensive variety: Corn, wheat, sugar beets, tobacco, oats, barley, alfalfa, crimson and red clover, rye, sunflowers, cotton, rice, soybeans, hops, hemp, flax, rape, plums, apples, peaches, apricots, figs, cherries, most small fruits and vegetables, peppers (sweet, hot, hotter, and still hotter), potatoes, edible beans, nuts, olives, and citrus.

Yugoslavia also abounds in small plants which are used in medicine, perfume, or good cookery. Cheap labor

still makes it possible to harvest wild growing sage, juniper berries, bilberries, lavender, camomile, linden, oak moss, marsh mallow roots, gentian (named for an ancient Illyrian King), belladonna, coriander, fennel, and other medicinal plants, some of which are exported to the United States.

Because of this wide variety of native plants, the U.S. Agricultural Research Service recently signed an agreement with Yugoslavia for the collection and screening of native plants, with the idea that some of these plants, not now grown commercially, might be worth developing. Steps are also underway to collect, and preserve for breeding purposes, some of the country's indigenous strains of corn which may possess qualities useful for incorporation into U.S. hybrids.

This list gives some of the more or less unusual agricultural products Yugoslavia exported in 1960, and the share which went to the United States.

	Total exports Metric tons	To the U.S. Metric tons
Pumpkin seeds	1,645	52
Shelled walnuts	150	12
Prunes	19,645	64
Dried sour cherries	150	104
Hops	4,652	734
Hip fruits	455	43
Paprika	407	90
Coriander & fennel	132	64
Juniper berries	947	5
Plum brandy	185	37
Tobacco	18,325	4,067
Camomile	77	3
Belladonna leaves & roots	93	25
Oak moss	564	64
Gentian & marsh mallow roots	92	10
Sage leaves	650	630
Other medicinal plants	3,295	171

Yugoslavia has a great variety of forest trees and consequently of forestry products. The range of mineral products is quite extensive.

Nor does variety end there. Yugoslavia is made up of many people: Serb, Croat, Montenegrin, Macedonian, Bosnian, Slovenian, Dalmatian, Hungarian, Turk, Bulgarian, Czech, and other minorities—and a number of religious beliefs: Serbia-Orthodox, Catholic, Moslem, and those who profess no religious ties.

From this gamut of peoples, faiths, plants, and other resources, Yugoslavia hopes to weld a nation strong in agriculture and industry.



Since half of Yugoslavia's people live on farms, much of the work is done by hand. Above, women cutting hemp with sickles. Right, a peasant and a day's pick of raspberries.



In late summer the hops are picked, bagged, and taken by wagon to the barn for cleaning, as below. Yugoslavia exports 90 percent of its hops.



South Africans Eat More U. S. Rice

By W. J. EDENS
U.S. Agricultural Attaché
Pretoria, South Africa

South Africans are eating twice as much rice as they did 10 years ago, and an increasingly larger part of it comes from the United States. At the same time, production of rice in the Republic has been decreasing and now amounts to less than 10 percent of annual consumption, which approximates 60,000 tons.

Prior to 1940, virtually no rice was cultivated in South Africa, with the exception of that planted by Indians along the Natal coast. When World War II came, rice was difficult to obtain. Prices rose and this stimulated production, particularly in the northeastern Transvaal and in Swaziland. However, annual production, as shown in the following table, has never climbed much above 8,000 tons; and with a limited water supply, South Africa will continue to import practically all of its rice requirements:

	Est. output Tons	Imports Tons
1935-39 average	—	69,287
1940-41	—	82,454
1944-45	90	27,811
1949-50	450	639
1954-55	8,040	32,474
1959-60	3,000	52,854
1960-61	2,000	55,897est.

For 15 years before 1960, all rice imported by South Africa was purchased by the government's Department of Nutrition. Profits made by the Department were plowed back into a program of fortifying the nutritional value of wheat bread, bought mostly by the native population. This program proved to be of little health value and was discontinued in 1959. The importation of rice was then returned to regular commercial channels.

Rice, prior to 1960, was imported from the Far East, Egypt, and a few other countries. None was being taken from the United States except in the form of breakfast cereals. With the end of the government monopoly, consumers and rice importers began expressing a preference for U.S. long grain rice, and 1960 saw 44 percent of South Africa's rice imports coming from the United States.

The following table, which shows the Republic's rice imports by countries of origin for the past 3 years, reveals the pattern of rice imports since the government purchase program ended. Purchases from the United States, as indicated here, have made a phenomenal gain from practically none in 1958 to over 23,000 tons—almost half of total rice imports in 1960:

Source	1958 Tons	1959 Tons	1960 Tons
United States	222	5,203	23,068
Thailand	386	18,655	13,880
Vietnam	0	11,682	13,656
Italy	683	753	739
Pakistan	0	550	672
Burma	391	553	391
Rhodesia & Nyasaland	0.3	103	355
China	22,698	201	92
Others	0	106	1
Hong Kong	24	0	0
United Arab Republic	18,552	0	0
Total	43,956.3	57,806	52,854

Rice merchants now estimate that about 60 percent of South Africa's 1961 rice imports will come from the United States. In view of present trends, this means South Africans will consume an additional 10 tons of U.S. rice this year.

Recent action by the South African Government to restrict some imports because of the present shortage of foreign exchange could reduce rice imports by about 25 percent in the current year. However, rice importers are drawing on their next year's quotas, and any decline in imports would be likely to show up in 1962. Exchange difficulties could be greatly eased by then, and restrictions on basic food items shifted to less essential imports.

South African farmers are encouraged to produce less rice because of its competition with corn as a food crop. Yet rice is growing in demand as a food, and corn consumption per capita has been decreasing in the face of rising corn production. It is recognized by the South African Government that as the standard of living improves, especially for the Bantu, corn may be replaced to an increasing extent by bread crops richer in protein.

In general, the outlook is bright. U.S. exporters should continue to sell South Africa the biggest share of the rice it needs. Rice importers like to buy where there are many types and grades available. Shipments, they say, usually come up to contract specifications. Also, there appear to be no entrenched trading patterns with other rice-producing countries, and transportation distances from all major rice sources to South Africa are comparable.

U.S. Agricultural Attaché W. J. Edens, center, with William J. Sevenster, left, and South African importer S. Weinstein examine samples of U.S. rice.



El Salvador—A Country on the Move To Build a Modern Dairy Industry



Well-built bull stud, left, is typical of the artificial insemination centers run by El Salvador's Ministry of Agriculture to help dairymen improve native breeds. Cows are bred at no charge. Bulls are bought in the United States.

By FREDERICK M. LEGE, III
Dairy and Poultry Division
Foreign Agricultural Service

For some time, El Salvador has been looking for ways to lessen its economic dependence on coffee. Basically an agricultural country, it needs agricultural answers to this problem. One answer it is working on is dairying.

The Ministry of Agriculture and Livestock feels that developing a modern dairy industry will pay dividends in several ways: first, by helping increase the incomes of small farmers; second, by bringing down the cost of milk production—at present, steep enough to keep retail milk prices uncomfortably high for most urban workers.

El Salvador's best lands have long been devoted to coffee, which accounts for the largest part of the country's export earnings. Rather than encourage dairymen to compete in the coffee areas, the Ministry is helping them make the most efficient use of the present livestock areas and utilize El Salvador's well-developed highway system to transport their milk rapidly to urban customers.

Feed is a major problem for El Salvador's dairymen. For 6 months of the year, the weather is very dry—in some

years, nearly to the disaster point. There is a deceptive abundance of green feed the other 6 months, but it is low in protein. The Ministry carries on pasture research to find the high protein grasses and legumes needed. Most successful to date is kudzu, both as a green feed and as a silage mixture with pangolagrass. Kudzu has the further advantage of protecting the land against erosion by El Salvador's torrential rains.

High on the list of the government's services to dairying is its sponsorship of the agricultural school. With a physical plant completed less than 4 years ago, the school is modern in every sense. It has a young and expert staff: its director and the head of its dairy husbandry department are both graduates of the University of California at Davis; the head of the animal husbandry department is from Louisiana State University. The government furnishes tuition, food, and lodging for the students, who are selected on the basis of qualifications. For 11 months a year they study everything from horticulture to husbandry. In 3

Native Cows



U.S. Stud Bull



years, when they finish the course, local landowners snap them up; there are always more jobs than there are graduates.

The Ministry also sponsors an 8-weeks' course for dairy workers. At its installation at Izalco, selected workers receive free lodging, with food the only expense, and study modern techniques of feeding, breeding, sanitation, and milking. The certificate they earn carries high prestige value; the school has more admission requests than it can accommodate.

To aid dairy farmers in upgrading their herds, the Ministry has built artificial insemination centers, stocked them with excellent bulls from the United States, and trained a staff of inseminators, to furnish artificial breeding for local cows at no cost to the farmer. In 1960, over 8,000 cows were bred, with outstanding results. Like anything new, artificial breeding took a while for the farmers to accept, but they are now more and more enthusiastic about it.

For farmers who want to use natural service or develop future herd sires of bloodlines unrelated to the bulls in the bull stud, the Ministry imports young U.S. bull calves for resale at cost. These animals are selected from cow families of heavy milk production, with due emphasis on conformation. Prices f.o.b. U.S. farms are kept to a minimum, so that the delivered price in El Salvador will be within the reach of the smaller farmers. The Ministry also gives technical help in vaccination and in feeding for proper development.

El Salvador's cattle breeders, this year for the first time, requested a U.S. judge for the annual Santa Ana Exposition in July. The judge was asked to stay on for a few days after the show to help the breeders select native cattle around which to build their herds. He also helped the owners of purebred cattle assess their animals' strong and weak points so as to make efficient choices of sires for their breeding programs.

None of these programs can bring instantaneous results; but a solid groundwork has been laid. Farm people and merchants will soon benefit from added income; city consumers, from more milk at lower prices.

Germany—East and West

(Continued from page 10)

to prewar levels; moderate success in increasing livestock production (excluding output from imported feed) has offset a decrease in crop production. Livestock numbers, except for horses and goats, are above the prewar level, though output of animal products has not shown a corresponding increase because yields per animal are lower.

For some commodities the region used to export, such as feed and food grains, the combination of decreasing or stagnated yields with smaller acreages has meant that imports are now necessary. For example, feed must be imported from the Sino-Soviet Bloc (mainly the Soviet Union) to sustain the growing livestock herds. In spite of these imports, young animals have died during the past few years from lack of feed and from inadequate care on collective farms. However, privately owned animals still exist in East Germany (on the private plots of collective-farm members), and their productivity has increased.

West Germany, in contrast, has attained a total agricultural level 41 percent higher than prewar, with livestock production (excluding output from imported feed) 37 percent higher. Though not having so rapid an increase in total livestock numbers as East Germany, it has achieved greater output of animal products from increased productivity per animal.

Food Situation

In spite of a decreasing postwar population, East Germany did not officially abolish rationing until 1958. Moreover, shortages of meat, butter, potatoes, fruits, and vegetables frequently occur because of insufficient production and inefficient distribution. Meanwhile, West Germany has steadily increased its production of foodstuffs and continues to be a major importer of food and feed.

In East Germany in 1959, grains and potatoes supplied about 50 percent of the calorie value of the food supply, animal products about 20, fats and oils about 16, sugar about 10, and fruits and vegetables the rest. This is much the same food supply pattern that prevailed before the war.

In contrast, the quality of the daily diet in West Germany is up over prewar, with grains and potatoes now accounting for about 35 percent of the calories, animal products about 25, fats and oils about 20, sugar about 10, and fruits and vegetables the rest.

Agricultural Trade

The principal farm products imported by East Germany are food and feed grains, meat, butter, vegetable oils (and oilseeds), eggs, and fruit. These came mostly from the Soviet Bloc. West Germany's agricultural imports are mainly food and feed grains, oilseeds, fruits, vegetables, and poultry—mostly from countries of the West, including the United States.

Perhaps the best indication of a country's agricultural success is whether production is increasing as fast as population. For East Germany, the answer seems to be no. In 1959, it depended on imported foodstuffs for about 25 percent of the total calories consumed daily per person, as against some 10 percent before the war. Meanwhile, the population had gone up only 5 percent.

In West Germany, despite a population increase of 34 percent, the share of calories supplied by imports rose only from 28 to 30 percent. Clearly, West Germany's agricultural output is more nearly keeping pace with its population growth.

U.S. Provides Vegetable Oil For Needy Foreign Families

Volunteer agencies assisting in the Food for Peace program will receive 400 million pounds of vegetable oil—chiefly soybean—during 1962 for their feeding programs among needy people in foreign countries.

USDA can now provide this oil to the agencies in quantity for the first time, to supplement the dry storable foods they receive under Title III of P.L. 480. So far, they have had to limit it to schools, hospitals, orphanages, and homes for the aged.

Now, however, cooking oil can be included in the food packets the agencies distribute to families. This will both increase the food value of the packets and help the families prepare and use other types of foods.



Record Year Anticipated For U.S. Poultry Exports

If U.S. poultry shipments abroad continue at their present pace, 1961 will set a new export record—over 200 million pounds.

Foreign sales for the first 6 months of this year registered a 51-percent increase over those for the same period last year. The most important market is still West Germany, with Switzerland the second most important. Currently Japan is being explored as a possible market.

India Ships First Raw Sugar To U.S. Under New Agreement

India's first sugar exports to the United States will replace a small portion of the quota that would ordinarily be allotted to Cuba. Some 225,000 tons of raw sugar will be shipped here in the next year under a recently signed U.S.-Indian sugar agreement.

Because of high production costs in India and a large and growing domestic demand, the country has never exported significant amounts of sugar.

U.S. Sells More Rice Despite Cuban Decline

In the 1958-59 marketing season Cuba was the United States' No. 1 rice market. That year it took over 4 million hundredweights of this country's rice. Last season, 1960-61, the sales figure dropped to only 216,000 hundredweights.

Such a decline might have proved crippling to the U.S. foreign rice trade. Yet this was not the case. U.S. rice exports for the season ending this past July were 2 percent higher than in the previous year.

Compensating for the Cuban fall-off were considerably larger shipments to West Germany, India, and Pakistan. Furthermore, exports to Africa showed an increase of 81 percent over 1960-61.

U.S. Variety Meats May Gain New Italian Market

A new market for U.S. pork variety meats may be the principal U.S. gain from Italy's recent removal of licensing requirements for dollar-area imports of slaughter hogs and some pork products.

The ban was put on a year ago to protect Italian farmers against a sharp drop in hog prices. It forbade imports even from other Common Market countries until strong protest caused the Italian Government to limit the ban to dollar-area countries like the United States and Canada.

Fatback, formerly the United States' only important export to Italy in this line, while no longer banned, may not be imported until Italian prices for fatback are above 18 U.S. cents per pound. They are now below this.

Smaller U.S. Cotton Exports Foreseen for 1961-62 Season

Exports of U.S. cotton during the 1961-62 marketing season are estimated at about 5.75 million running bales—down somewhat from last year's 6.6 million bales.

Japan will undoubtedly be the biggest buyer, maintaining the lead that it has held for the past 10 years. In 1960 the United States shipped Japan 1.7 million bales. India was second last year, taking 599,000 bales, mostly under U.S. Government programs. France followed closely with imports totaling 549,000 bales.

Indonesia Renews Copra Exports to Mainland China

Indonesia has resumed shipments of copra to Mainland China. Exports for 1961 are expected to total 16,000 tons by the end of December. There were apparently no Indonesia-to-China copra shipments last year but recent exports have gone as high as 36,408 tons per year, the record that was set in 1956.

Western Europe Is Center Of Rising World Egg Trade

World trade in shell eggs, most of it in Western Europe, went from approximately 637 million dozen in 1959 to 669 million in 1960. Top markets, West Germany and Italy, bought 75 percent of all eggs imported in 1960; the Netherlands and Denmark together supplied 52 percent of all eggs exported during that year.

Israel, now in fourth place as a supplier, has made the most rapid gains, going from .1 million dozen eggs in 1956 to 30 million last year. Poland, in third place, went from 26 million to slightly over 75 million during the same period.

Argentina Grain Exports Register a Decided Drop

Argentine grain shipments dropped from 6.1 million tons in the 1959-60 marketing year to 4.1 million this past year. Wheat exports were down 10 percent, corn 40 percent, and minor grains (rye, oats, barley, and sorghums) 21 percent.

Wheat sales to the Latin American countries and Italy were substantially higher than in the previous year, but these gains were offset by reduced shipments to West Germany, the Netherlands and the United Kingdom.

Italy was the major market for Argentine corn, but exports to Argentina's other corn markets—Belgium-Luxembourg, the Netherlands, and Japan—were down. Shipments of rye were above those of the previous year, while oats, barley, and sorghum exports declined. Most of these smaller grains went to Western Europe.

West Germany Foresees Larger Grain Imports

With grain production down 20 percent this year, West Germany has tentatively set its grain import requirements for 1961-62 at around 6.5 million metric tons. Last year its foreign purchases totaled 4.35 million.

The country's official preliminary estimate places production at 12.4 million tons. This means that bread grains have fallen off 27 percent and coarse grains have fallen off 11 percent.

UNITED STATES
GOVERNMENT PRINTING OFFICE
DIVISION OF PUBLIC DOCUMENTS
WASHINGTON 25, D. C.

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West Germany Makes Surplus Sugar Sale to Pakistan

West Germany's first surplus food sale is sending 25,280 short tons of sugar to Pakistan under terms reminiscent of P.L. 480 agreements.

Eighty percent of the rupees paid will go for economic development loans to Pakistan. Ten percent will be used for West German technical assistance in Pakistan, and 10 percent for the use of the German Government.

Pakistan's urgent need for sugar after two years' bad crops was also behind the government's permitting a Pakistani firm to buy a similar quantity of sugar of Cuban origin. Previously all sugar has been bought by the government.

World Pepper Consumption Down Since World War II

There's less pepper in the world's pots today than there was before World War II and it travels different trade routes. India replaced Indonesia as the world's leading supplier of black and white pepper. The United States is still the largest importer but the Soviet Union is second and the United Kingdom has dropped to third place.

Production in 1960—about 80,000

tons—was far greater than 1959's 68,000 tons but still below the prewar 83,000 tons a year. India and Sarawak, the first and third largest producers, respectively, have both increased their output since the war but not enough to counterbalance production declines in Indonesia and Ceylon, the second and fourth.

Consumption declines are attributed, at least in part, to increased use of prepared foods which contain less pepper than home-cooked foods.

U.S. Wheat May Replace Soviet in Norway Market

U.S. wheat exports to Norway may increase by as much as 50 percent if the Norway-USSR trade agreement now in effect is not renewed when it expires at the end of this year. Rye exports would increase about 15 percent.

The current 3-year bilateral agreement gives the USSR approximately a quarter of the Norwegian wheat market and half the rye market. In return, Norway exports difficult-to-sell hardened marine oils and salted herring to the Soviet Union.

Last year the Soviet Union's wheat exports to Norway—93,800 metric tons—far exceeded the treaty figure.

Australia's Quality Beef May Go to New Markets

Under the revised Australian-U.K. 15-year meat agreement which became effective last month, Australia is no longer required to ship all first- and second-quality beef to the United Kingdom, and consequently can now develop other markets for its better grades. At the same time, Australia is being protected by a minimum price in the United Kingdom—15.6 cents per pound for first quality beef hind-quarters.

Lamb prices will remain unchanged until October 1962 when they will drop 2½ percent. No minimum price was set for mutton, but Australia was assured free access to U.K. markets.

Tallow and Greases Sales Set New 5-Year Record

More inedible tallow and greases left the United States in the first 7 months of 1961 than in any similar period since 1956—over 1.6 billion pounds.

Japan was the largest market in this period, taking 207 million pounds, and the Soviet Union was a close second at 189 million. The other big tallow and greases markets were Italy, the Netherlands, and West Germany.